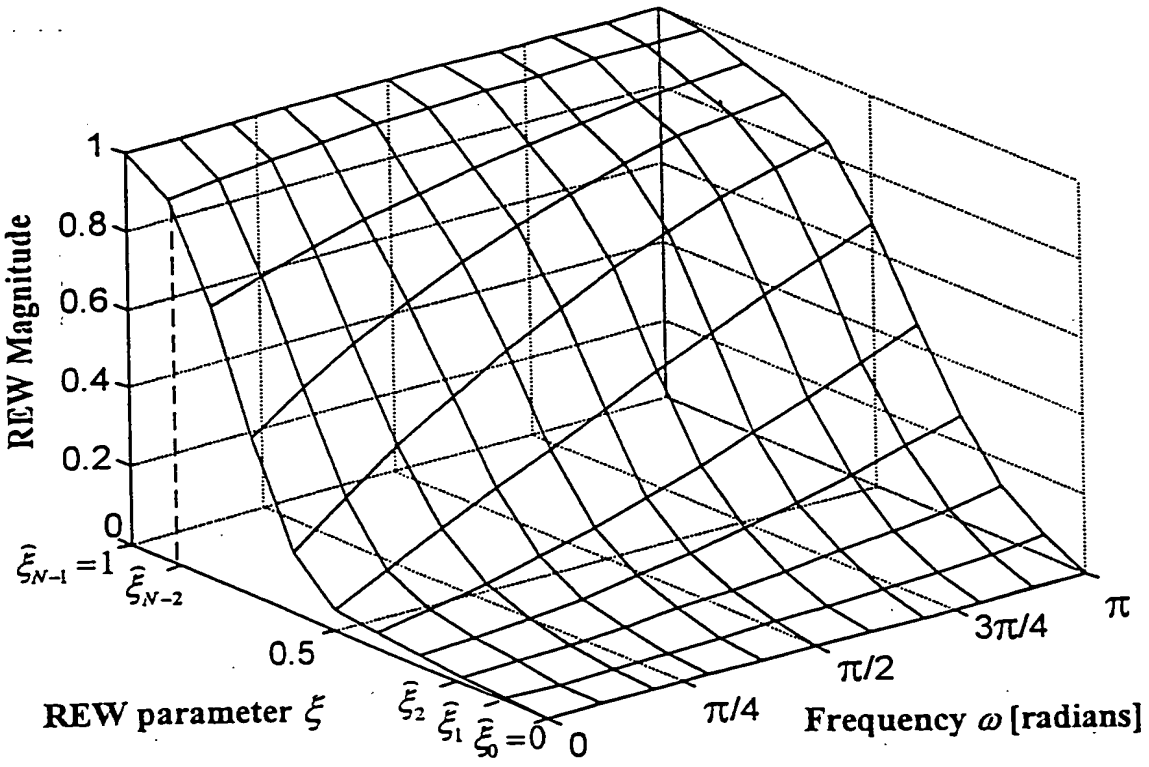
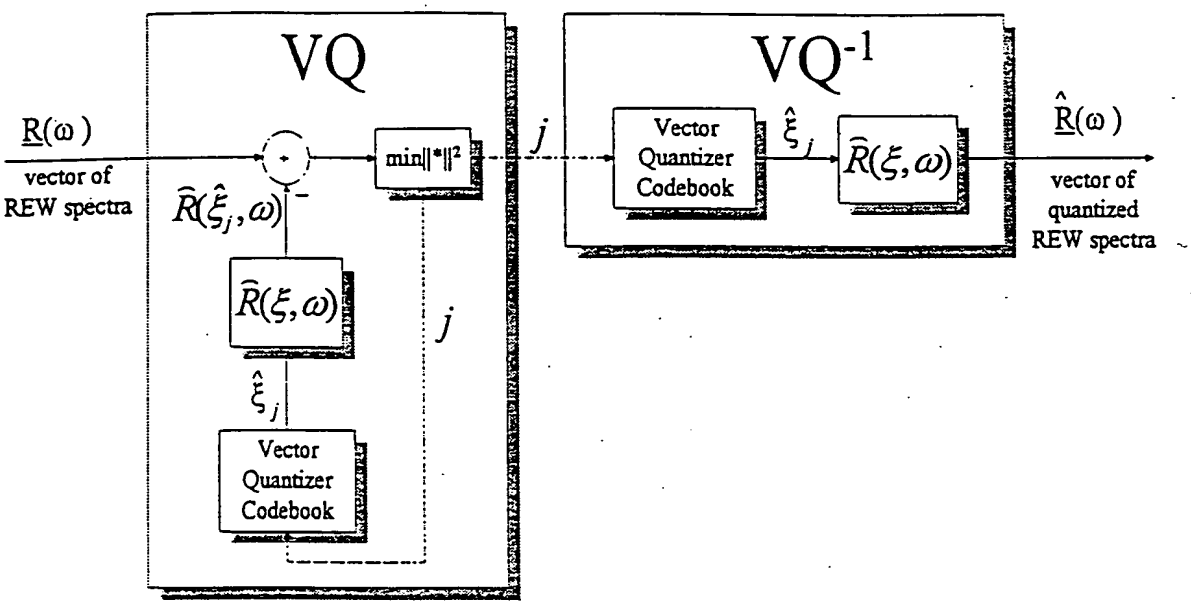
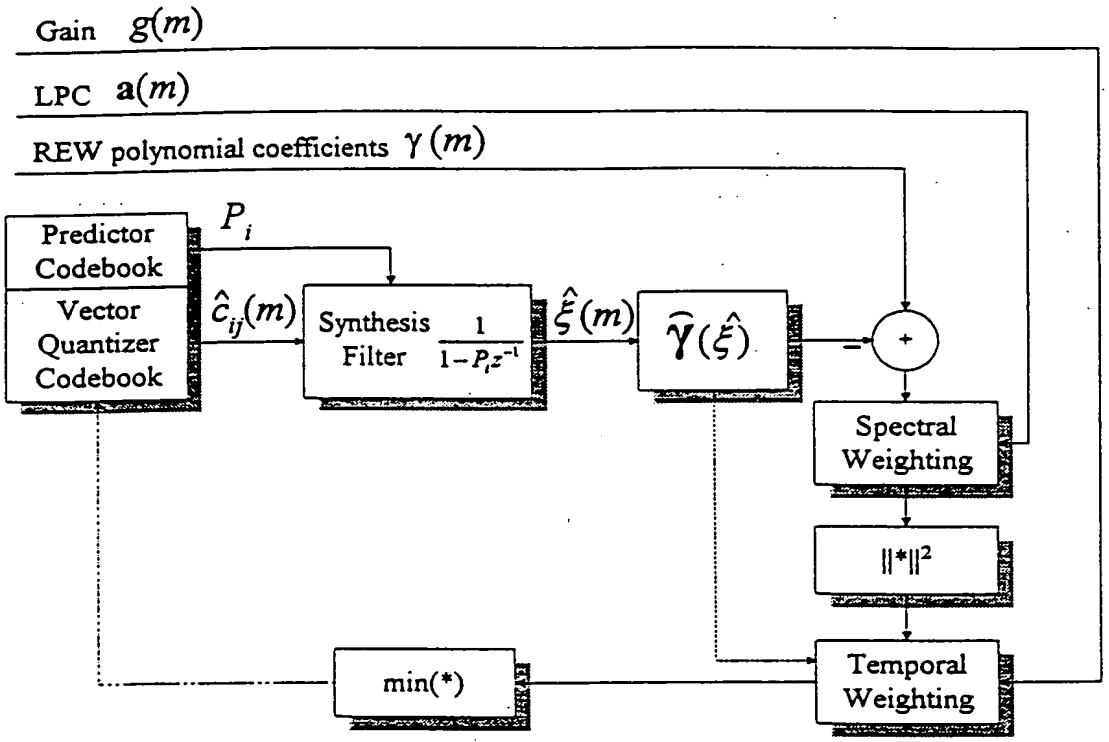
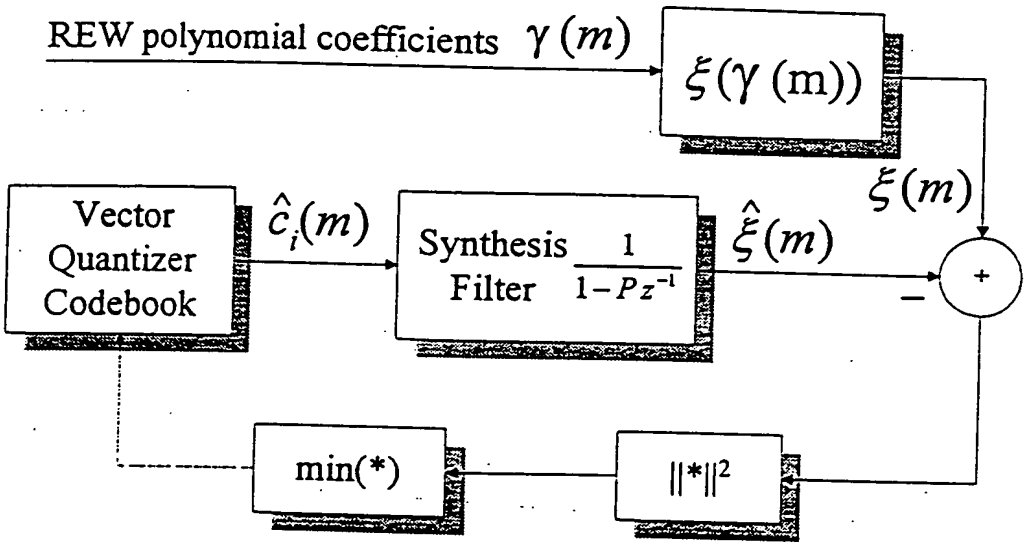
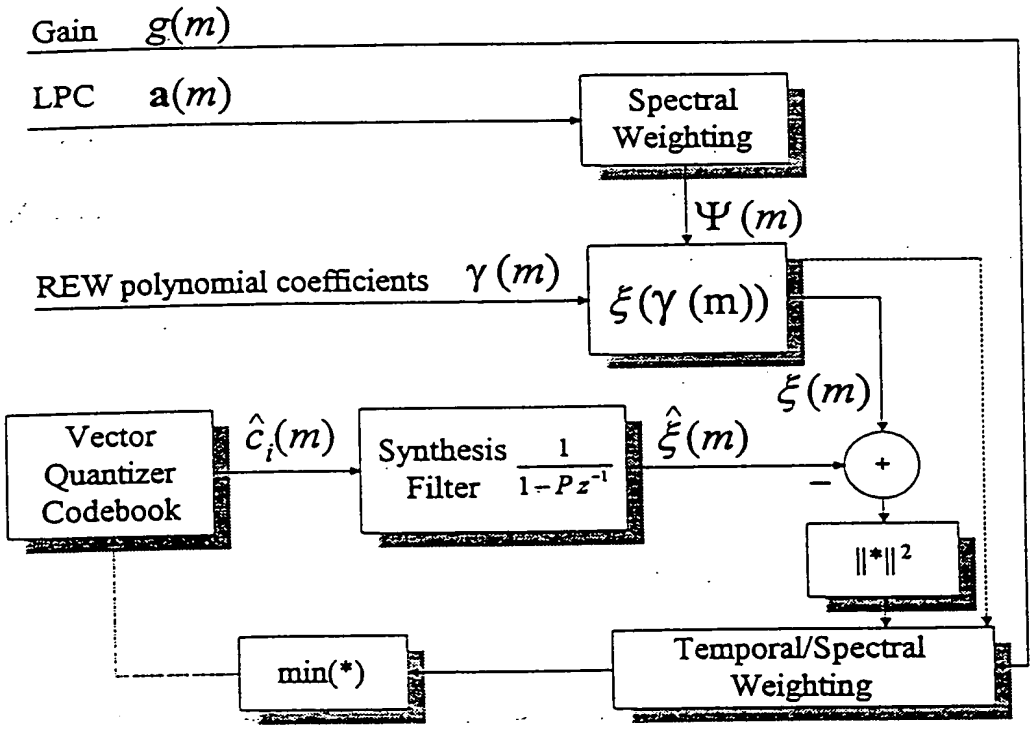
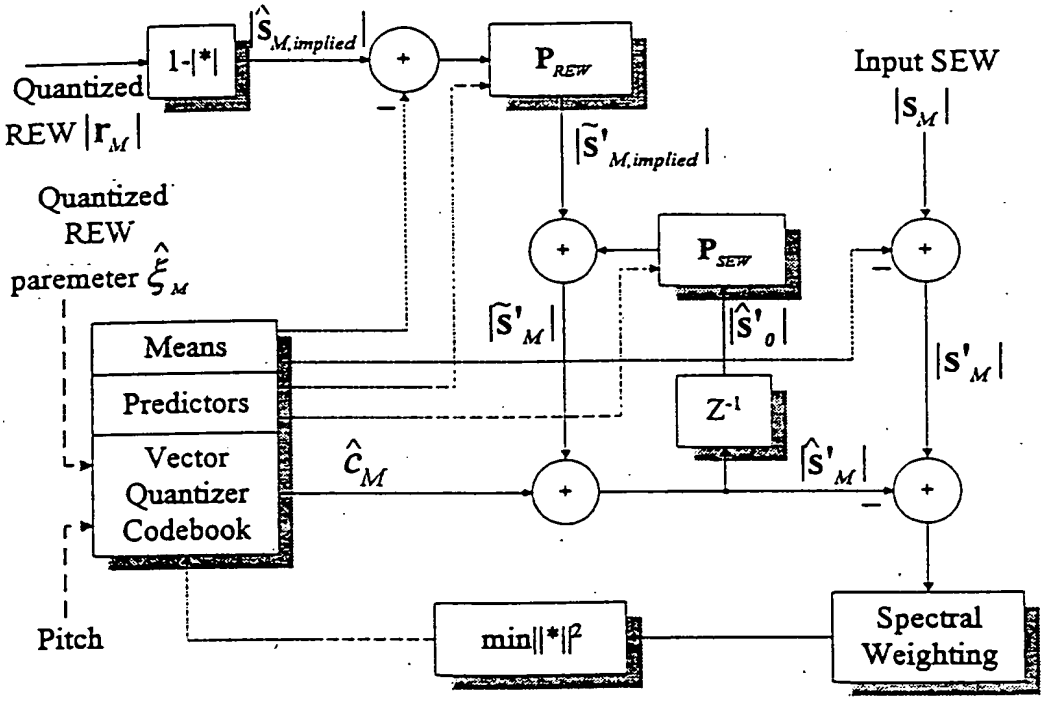

REW Magnitude
1
0.8
0.6
0.4
0.2
0
$\xi_{N-1}=1$
ξ_{N-2}
0.5
REW parameter ξ
ξ_2 ξ_1 $\xi_0=0$
0
π/4
π/2
3π/4
π
Frequency ω [radians]

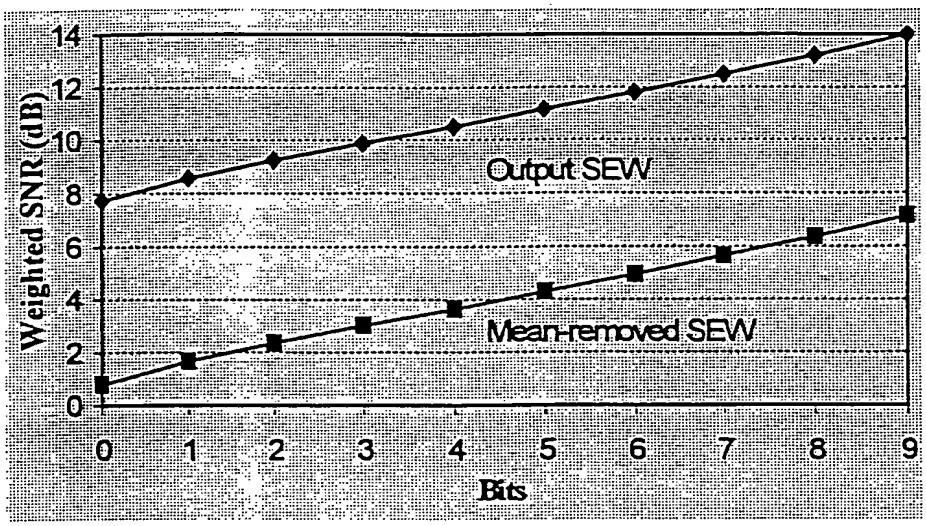

VQ
VQ-1
R(ω)
vector of
REW spectra
min||*||²
j
Vector
Quantizer
Codebook
ξ̂j
R̂(ξ,ω)
R̂(ξ̂j,ω)
R̂(ω)
vector of
quantized
REW spectra

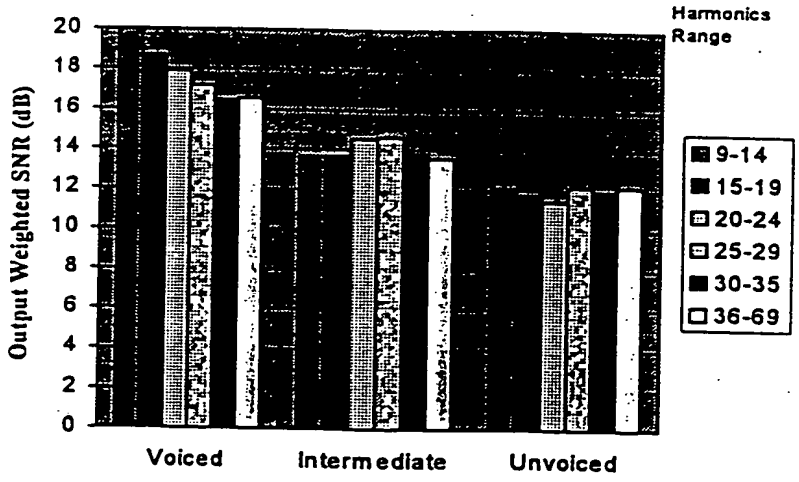

Gain $g(m)$
LPC $\mathbf{a}(m)$
REW polynomial coefficients $\gamma(m)$
Predictor Codebook
Vector Quantizer Codebook
P_i
$\hat{c}_{ij}(m)$
Synthesis Filter $\frac{1}{1-P_i z^{-1}}$
$\hat{\xi}(m)$
$\widehat{\gamma}(\hat{\xi})$
+
−
Spectral Weighting
$\|*\|^2$
Temporal Weighting
min(*)

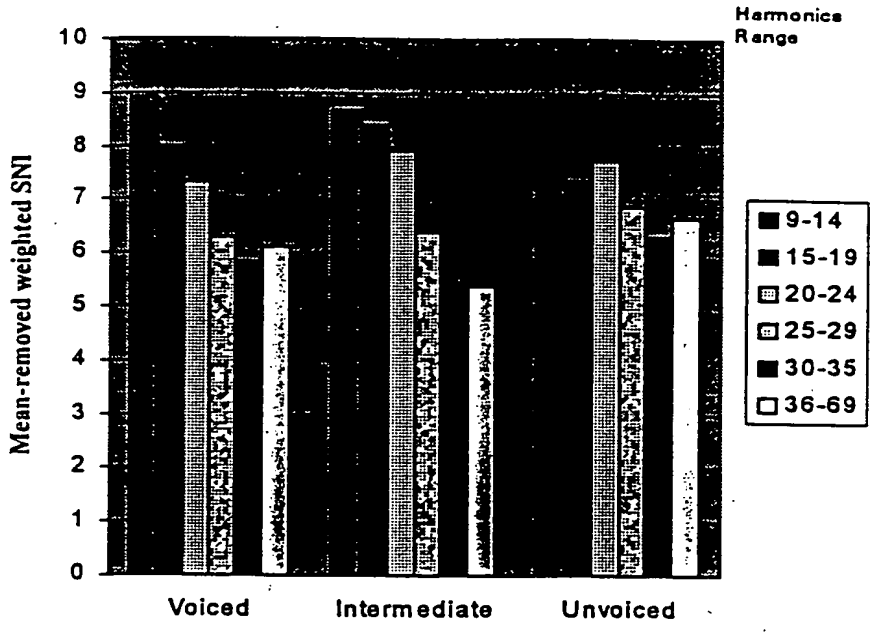

REW polynomial coefficients $\gamma(m)$
$\xi(\gamma(m))$
$\xi(m)$
Vector Quantizer Codebook
$\hat{c}_i(m)$
Synthesis Filter $\frac{1}{1-Pz^{-1}}$
$\hat{\xi}(m)$
+
−
min(*)
$\|*\|^2$

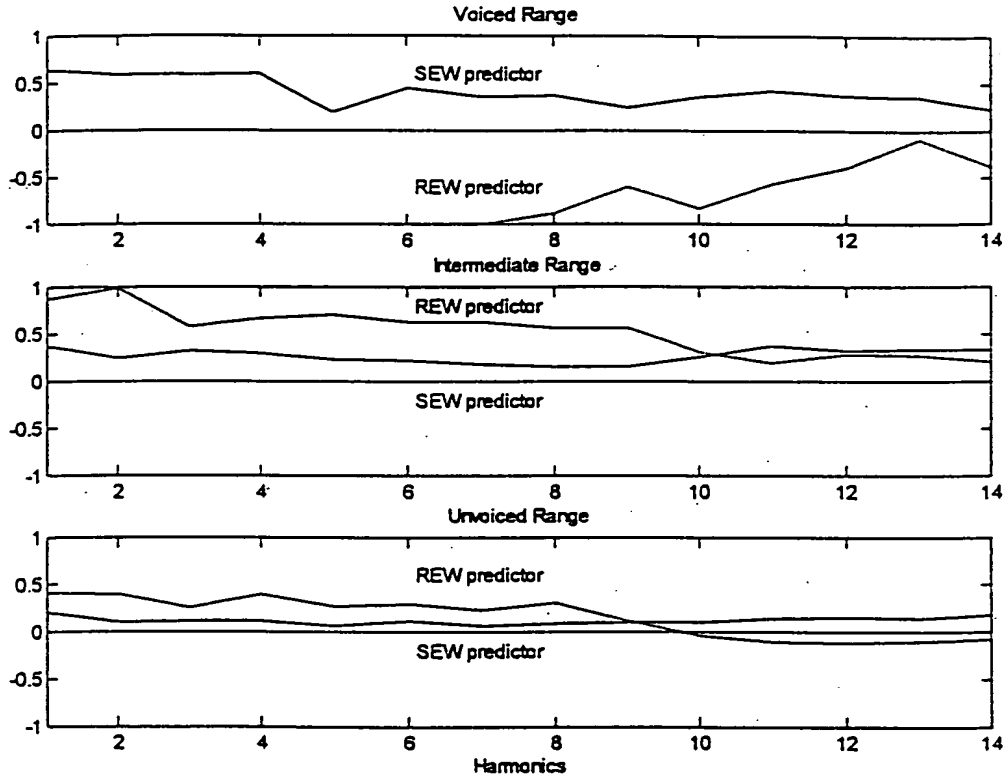

Gain $g(m)$
LPC $\mathbf{a}(m)$
Spectral Weighting
$\Psi(m)$
REW polynomial coefficients $\gamma(m)$
$\xi(\gamma(\mathrm{m}))$
$\xi(m)$
Vector Quantizer Codebook
$\hat{c}_i(m)$
Synthesis Filter $\frac{1}{1-Pz^{-1}}$
$\hat{\xi}(m)$
+
−
$\|*\|^2$
min(*)
Temporal/Spectral Weighting


Quantized REW $|r_M|$
1-|*|
$|\hat{s}_{M,implied}|$
P_{REW}
$|\tilde{s}'_{M,implied}|$
Input SEW $|s_M|$
Quantized REW paremeter $\hat{\xi}_M$
P_{SEW}
$|\tilde{s}'_M|$
$|\hat{s}'_0|$
$|s'_M|$
Means
Predictors
Vector Quantizer Codebook
$\hat{c}_M$
Z^{-1}
$|\hat{s}'_M|$
Pitch
min||*||²
Spectral Weighting


Weighted SNR (dB)
14
12
10
8
6
4
2
0
Output SEW
Mean-removed SEW
0
1
2
3
4
5
6
7
8
9
Bits


Output Weighted SNR (dB)
20
18
16
14
12
10
8
6
4
2
0
Voiced
Intermediate
Unvoiced
Harmonics Range
9-14
15-19
20-24
25-29
30-35
36-69


Harmonics Range
Mean-removed weighted SNR
10
9
8
7
6
5
4
3
2
1
0
9-14
15-19
20-24
25-29
30-35
36-69
Voiced
Intermediate
Unvoiced


Voiced Range
SEW predictor
REW predictor
Intermediate Range
REW predictor
SEW predictor
Unvoiced Range
REW predictor
SEW predictor
Harmonics